

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF THE CLAIMS:

Claims 1-23 (cancelled)

24 (new) A semiconductor integrated circuit device comprising:

a correlation double sampling circuit for sampling an analog color video signal output from an imaging element;

an amplifying circuit for amplifying the analog color video signal output from the correlation double sampling circuit;

an AD conversion circuit for converting the analog color video signal amplified by the amplifying circuit to a digital signal comprising codes;

a differential circuit for obtaining a difference between codes in regard to same colors; and

a code conversion circuit for code conversion of an output of the differential circuit,

wherein the correlation double sampling circuit, the amplifying circuit, the AD conversion circuit, the differential circuit, and the code conversion circuit are formed on a semiconductor substrate,

wherein a gain of the amplifying circuit can be varied,

wherein codes which are output from the AD conversion circuit in an integral multiple of a sampling period of the correlation double sampling circuit adjoin each other

according to an order in which the codes are output from the AD conversion circuit.

25. (new) A semiconductor integrated circuit device according to claim 24, wherein a time of an integral multiple of the sampling period corresponds to a color arrangement of the analog color video signal output from the image element.

26. (new) A semiconductor integrated circuit device according to claim 25, wherein the differential circuit comprises a circuit to set the time.

27. (new) A semiconductor integrated circuit device according to claim 26, wherein the circuit to set the time comprises a register for setting the time.

28. (new) A semiconductor integrated circuit device according to claim 25, wherein the time corresponds to a color filter used with the image element.

29. (new) A semiconductor integrated circuit device according to claim 24,

wherein the code conversion circuit is a binary gray code conversion circuit for converting an input binary code to a gray code as the output.

30. (new) A semiconductor integrated circuit device according to claim 24,

wherein the code conversion circuit comprises a circuit for adding or subtracting a fixed value to or from an input code as the output.

31. (new) A semiconductor integrated circuit device according to claim 24,

wherein the differential circuit comprises:

a delay circuit for delaying each of the codes from the AD conversion circuit; and

a subtraction circuit for obtaining a difference between each of the codes delayed by the delay circuit and each of the codes from the AD conversion circuit,

wherein the delay circuit is constructed to vary a delay time depending on a color arrangement of the analog color video signal.

32. (new) A semiconductor integrated circuit device according to claim 24,

wherein a first output code is an output of the differential circuit,

wherein change bits between a second output code from the code conversion circuit and a next to the second output code are less in number than change bits between the first output code and a next to the first output code by the code conversion when the first output code changes from positive to negative,

wherein change bits between the second output code and the next to the second output code are less in number than changes bits between the first output code and the next to the first output code by the code conversion when the first output code changes from negative to positive.

33. (new) A semiconductor integrated circuit device according to claim 24,

wherein a first output code is an output of the differential circuit,

wherein change bits between a second output code from the code conversion circuit and a next to the second output code are less in number than change bits between the first output code and a next to the first output code by the code conversion, if the first output code is inversed based on a complement representation when the difference is obtained by the differential circuit.

34. (new) A semiconductor integrated circuit device comprising:

a correlation double sampling circuit for sampling an analog color video signal output from an imaging element;

an AD conversion circuit for converting the analog color video signal output from the correlation double sampling circuit to a digital signal comprising codes;

a differential circuit for obtaining a difference between codes in regard to same colors; and

a code conversion circuit for code conversion of an output of said differential circuit,

wherein the correlation double sampling circuit, the AD conversion circuit, the differential circuit, and the code conversion circuit are formed on a semiconductor substrate,

wherein codes which are output from the AD conversion circuit in an integral multiple of a sampling period of the correlation double sampling circuit adjoin each other according to an order in which the codes are output from the AD conversion circuit.

35. (new) A semiconductor integrated circuit device according to claim 34, wherein a time of an integral multiple of the sampling period corresponds to a color arrangement of the analog color video signal output from the image element.

36 (new) A semiconductor integrated circuit device according to claim 35, wherein the differential circuit comprises a circuit to set the time.

37. (new) A semiconductor integrated circuit device according to claim 36, wherein the circuit to set the time comprises a register for setting the time.

38. (new) A semiconductor integrated circuit device according to claim 35, wherein the time corresponds to a color filter used with the image element.

39. (new) A semiconductor integrated circuit device according to claim 34,

wherein the code conversion circuit is a binary gray code conversion circuit for converting an input binary code to a gray code as the output.

40. (new) A semiconductor integrated circuit device according to claim 34,

wherein the code conversion circuit comprises a circuit for adding or subtracting a fixed value to or from an input code as the output.

41. (new) A semiconductor integrated circuit device according to claim 36,

wherein the differential circuit comprises:

a delay circuit for delaying each of the codes from the AD conversion circuit; and

a subtraction circuit for obtaining a difference between each of the codes delayed by the delay circuit and each of the codes from the AD conversion circuit,

wherein the delay circuit is constructed to vary a delay time depending on a color arrangement of the analog color video signal.

42. (new) A semiconductor integrated circuit device according to claim 34,

wherein a first output code is an output of the differential circuit,

wherein change bits between a second output code from the code conversion circuit and a next to the second output code are less in number than change bits between the first output code and a next to the first output code by the code conversion when the first output code changes from positive to negative.

43. (new) A semiconductor integrated circuit device according to claim 34,

wherein a first output code is an output of the differential circuit,

wherein change bits between a second output code from the code conversion circuit and a next to the second output code are less in number than change bits between the first output code and a next to the first output code by the code conversion, if the first output code is inversed based on a complement representation when the difference is obtained by the differential circuit.